

GRADUATE STEM EDUCATION (GSE)

FY 2012 Annual Report (10/1/11-9/30/12)

Linda Rodgers, NASA GSE Project Manager

Jet Propulsion Laboratory

818-354-3274

PROJECT DESCRIPTION

The NASA Graduate Stem Education Program (GSE) is an Agency-wide fellowship program (also called GSE Training Grants) for graduate study leading to masters or doctoral degrees in the fields of science, mathematics, and engineering related to NASA research and development. In 2010, NASA expanded GSE to include students that are interested in becoming teachers or education administrators. This twelve-month award requires students to participate in a 10-week NASA Center or HQ-based research experience at the NASA Center/HQ extending the GSE fellowship award.

The FY12 GSE program supported 80 graduate fellows at the cost of \$2,400,000. NASA scientists and engineers and NASA Center and HQ education specialists evaluated applications on the basis of academic transcripts, research proposals, University Faculty Research Advisors' recommendations, and the proposed utilization of a NASA Center or HQ or university research facilities.

Mentoring and research experiences are important aspects of the GSE fellowship. NASA Centers and NASA HQ hosted students during the twelve month award period; however, the schedule varied depending on the capacity of each Center and HQ. Recipients of the GSRP Training Grant must coordinate the schedule for the Center or HQ-based research experience with the Center Technical Advisor or Center/HQ Education Specialist and the Center/HQ GSRP Coordinator. Students do not receive additional funds for time spent at the Center/HQ.

PROJECT GOALS

The goal of NASA's GSE is to cultivate additional research ties to the academic community, to help meet the continuing needs of the Nation's aeronautics and space workforce requirements by increasing the number of highly trained scientists and engineers in aeronautics and space-related disciplines, and to meet the Nation's need to increase the number of highly trained teachers. Research

opportunities described on the GSE Web site are assessed and updated annually to complement the mission requirements of NASA.

PROJECT ACCOMPLISHMENTS

In 2012, GSE received a total of 80 renewal applications; 80 graduate fellows were selected to receive GSE fellowships, representing 44 separate institutions and 27 states, plus Puerto Rico. NASA Office of Education funded 75 graduate students at the cost of \$2,500,000. Centers funded an additional 5 fellows with center funds at the cost of \$150,000.

Of the 80 GSE fellows selected in FY2012, 31 were female, 49 male; 10 participants were underrepresented.

PROJECT BENEFITS TO OUTCOME 1

The need for increased STEM graduates in the U.S. is well documented. This need is dramatically magnified in the aerospace field. Documentation from the National Aerospace Initiative (2004) shows the average age of the U.S. aerospace workforce at 49. As many reports and studies affirm, the health of the aerospace workforce is directly connected to America's long-term security interests, both economic and defense. This research shows that one of the best methods of maximizing retention within the field of study is to incorporate hands-on research opportunities into the traditional course of study. Benefits in terms of retention to graduation, GPA at graduation, increased capability at graduation, pursuit of advanced degrees, and retention with the career field are well documented.

PROJECT CONTRIBUTIONS TO APG MEASURES

Since 2000, a total of 3,154 students have received M.S. and Ph.D. with GSE support. A survey conducted in February 2010 reached 182 GSE alumni. The findings indicate that the majority of alumni did not have full time employment at the time of the survey. Out of the 85 that were employed full time including fellowship and postdoc positions, 15% worked with NASA (13), additional 16% were employed in the aerospace-related industry that is non-NASA (14), 43% worked in academia STEM field (37), 21% in STEM field outside of academia and NASA (18), AND 5% were employed in non-STEM field (4).

PROJECT PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

The 80 GSE awardees are partners in the project. Under their GSE training grants they conduct NASA relevant research that leads to publications. University Faculty Advisors are essential partners as they oversee and evaluate the research progress conducted by the GSE fellow, and the NASA Center Advisor is a partner as mentor for the center research experience.